3.0 Affected Environment

3.1 Introduction

Section 3: Affected Environment describes the relevant resources of the areas that would affect or that would be affected by the alternatives if they were implemented. In conjunction with the description of the alternatives in Section 2 and the prediction of effects in Section 4 (Environmental Evaluation), this chapter presents the baseline conditions against which the decisionmakers and the public can review the effects of the alternatives.

3.2 Topography

Route 101 is a four-lane freeway, with two lanes in each direction. It is a principal arterial, connecting the coastal areas from Los Angeles through the Bay Area and then north to the Oregon border. This proposed project is located in, and extends south of, the City of Santa Rosa in Sonoma County. Topography is generally flat along the project and ranges in elevation from approximately 27 to 47 meters above sea level.

3.3 Geology, Soils, Seismicity and Hydrology

3.3.1 Geology

The proposed project is situated primarily in the Santa Rosa Valley and extends southward into the Cotati Valley. Both the Santa Rosa Valley and the smaller Cotati Valley are parts of a linear northwest trending bedrock depression within the Coast Ranges of Central California. The depression parallels regional geological structures and was formed by downwarping and movement along the major faults in the region and is now filled with alluvium to considerable depth.

3.3.2 Soils

The geological section in central Santa Rosa Valley is comprised of up to 100 feet of Quaternary alluvium consisting of interbedded gravelly sand and clay. The upper 25 feet of sediment consists predominantly of sandy to silty clay.

3.3.3 Seismicity

This proposed project is located in close proximity to several active faults. The Healdsburg-Rodgers Creek Fault is located 2.1 km east of the north end of the proposed project and is considered to be an active fault. A splay of this fault, which is mapped as concealed, crosses the proposed project approximately 305 m south of the Route 12/101 intersection. Another concealed fault splay is mapped as crossing the alignment near Bellevue Avenue. There are no proposed structures at the locations of the fault splays within the project limits. See **Table 5.VI.c** for a summary of other well identified, active faults located in the region:

The Healdsburg-Rodgers Creek Fault and the concealed fault splays pose the greatest seismic hazard to the proposed project due to their location and potential magnitude. The California Division of Mines and Geology has not designated the splays as Holocene active. There is a chance of surface rupture; but, since the highway at the fault crossing is at grade, the effects of surface rupture on the highway would be relatively minor and quickly and easily repaired. The surface rupture could also damage the proposed soundwalls. Using pile foundations and more frequent wall joints within the potential rupture zone will minimize damage and should prevent toppling. Additionally, all bridges in the proposed project area have been retrofitted to withstand the maximum credible earthquake magnitudes.

3.3.4 Hydrology

Santa Rosa and Matanzas Creeks flow eastward from the Sonoma and Mayacamas Mountains, converging within the City of Santa Rosa, just north of the proposed project. The Santa Rosa Creek flows westward through the town of Santa Rosa and discharges into the Laguna de Santa Rosa, which flows into the Russian River. The southern portion of the proposed project is drained by several creeks, which also flow into the Laguna de Santa Rosa.

A culverted portion of North Branch of the Laguna de Santa Rosa runs northwest of Roberts Lake Road, southwest of Horn Avenue, directly under the freeway.

The Colgan Creek Flood Control Channel runs just south of Hearn Avenue and then perpendicular to the freeway.

3.3.5 Floodplain

According to the Federal Flood Insurance Rate Maps [060375-0725B, 060375-0855B, 060380-0001B], this proposed project is outside of the 100-year flood zone.

3.4 Air Quality

The cites of Santa Rosa and Rohnert Park both lie within the San Francisco Bay Area Air Pollution Control District's jurisdictional boundaries. Air quality in this region is affected when pollutants are concentrated during temperature inversions. As a result, inland valleys are particularly susceptible to air pollution in the form of gases and particulates.

Caltrans addresses the impact of highway projects on air quality in accordance with the following air quality laws: The Clean Air Act and its Amendments, the EPA Final Regulations (August 1997), NEPA and CEQA.

The San Francisco Bay Area Air Basin is in attainment for Carbon Monoxide (CO) and a non-attainment area for Ozone and PM_{10}.

3.5 Noise

Noise is perceived subjectively by each individual. Acceptance of a certain type of noise or noise level varies among neighborhoods, individuals, and time of day. Physically, sound pressure magnitude is measured and quantified in terms of a logarithmic scale in units of decibels (dB).

Sounds heard in the everyday environment usually consist of a range of frequencies or pitches at different levels. Human hearing is not equally sensitive to sound in all frequencies. A frequency dependent adjustment called A-weighting has been devised so that sound may be measured in a manner similar to the way the human hearing system responds. An A-weighting network can be selected during noise measurements and the resulting A-weighted sound level provides a generally accepted descriptor for traffic noise. The A-weighted sound level decibel is often abbreviated "dBA". The A-weighted sound level is adequate for describing the noise at a particular location and instant in time. However, the average level of environmental noise fluctuates with time so that the A-weighted level of background noise changes with the cycle of human activities. The sound level descriptor used in this report is the hourly energy equivalent sound level (Leq). It is a particularly stable and predictable unit for the description of traffic noise and, at the same time, is well correlated to people's reaction to noise.

The residential and commercial areas are mixed along both sides of Route 101 within the proposed project area. A number of hotels/motels and two parks are also adjacent to the freeway. Mobile home parks are scattered along mostly the eastern side of the freeway. There are also undeveloped lands at various locations on both sides of Route 101. The roadway alignment is basically straight with the grade about .06 to 3 m above the surrounding terrain except at interchange areas.

Modeled receptor locations are generally situated in residential yards where noise sensitive activities take place. South Davis Street Park, at the northern end of the project is considered to be noise-sensitive as well.

Existing peak hour noise levels ranging from 64 to 80 dBA Leq (h) were measured and estimated at various locations within the project limits along Route 101. These sites were chosen from the first row of residences close to the freeway and were also used to model future worst-case noise. The locations, also known as receptors, are currently receiving noise levels over the FHWA/Caltrans noise abatement criteria of 67 dBA Leq (h).

Commercial lands adjacent to Route 101 are not considered noise-sensitive if no outside activities are found. Commercial buildings are usually well insulated against exterior noise, and the owners usually prefer visual exposure to freeway traffic for advertising purposes.

3.6 Hazardous Materials

Adjacent properties generally include industrial and commercial development on the east side of Route 101, and residential and commercial development on the west side of Route 101. Railroad tracks are present approximately 0.4 kilometers west of Route 101 until they cross beneath Route 101 just north of the Wilfred Avenue Interchange.

The initial site assessment (ISA) for the project (completed February 1997) indicated that there was potential soil and groundwater contamination due to underground storage tank leaks, hazardous waste material releases adjacent to state highway and aerial deposition of lead from motor vehicle exhaust. The contaminated sites are adjacent to the highway and may impact the project during the construction stage.

A re-evaluation of the site was completed in October 1998. Groundwater still exists within the project boundaries at depths between 1.5 and 6 meters below the ground surface (bgs). The regional groundwater flow direction is variable within the site vicinity, and is affected by proximity to streams and channels. In addition, the flow direction fluctuates as much as 180 degrees between the wet and dry seasons.

The results of an onsite reconnaissance performed on October 28, 1998 indicates that eleven active service station and several former service stations are located within the site vicinity. Monitoring wells and 210-liter drums were observed at several of the active and former service stations. The majority of the existing service station facilities located at the site have been in existence since the 1970's. Groundwater monitoring /remediation is ongoing or complete at many former and existing service stations.

A review of information obtained from governmental agencies indicates that:

(1) Underground storage tanks are reported for seventy-eight facilities within the site vicinity;
(2) Leaking underground storage tanks have been reported for numerous facilities along Santa Rosa Avenue, Corby Avenue and Moorland Avenue adjacent to Route 101; and
(3) Petroleum hydrocarbon groundwater impacts resulting from releases from adjacent properties are reported for thirteen properties.

Contamination of unpaved shoulders within the project area due to aerially deposited lead from vehicle emissions requires special handling (including reuse of the material) in accordance with the Department of Toxic Substances Control (DTSC) Lead Contaminated Soils Variance dated June 7, 1995. A site investigation was completed on August 19, 1999 to determine if the concentrations of lead in the unpaved shoulder areas and medians of the project area meet the criteria of the DTSC variance.

Along Route 12, 43 borings were drilled and sampled. 140 borings were drilled and sampled along Route 101. No groundwater was encountered. With respect to the DTSC variance, soils from the existing unpaved shoulders and medians along Routes 12 and 101 meet extractable and total lead levels such that they can be re-used but will likely have to be placed a minimum of five feet above the water table and covered with at least 2 feet of clean soil. Special provisions covering the implementation of a health and safety plan, the handling, and disposal of the contaminated material will be included in the construction contract.

3.7 Wetlands

The proposed project site is in the City of Santa Rosa surrounded by roadways, residential buildings, and commercial properties adversely affecting the habitat value of any remaining natural resources.

The jurisdictional waters of the United States (including wetlands) within the project limits include man-made culverts and drainage ditches, Laguna De Santa Rosa Creek, and Colgan Creek. The creeks' bed/bank within the project limits are concrete lined and as a result do not support vegetation cover. Along the eastern edge of the roadway, there is a drainage ditch that supports hydrophytic vegetation (vegetation that grows wholly or partially in water).

The habitat value of this drainage is greatly reduced due to the close proximity to roadway and traffic activities. The potentially impacted resources fall under Army Corps of Engineers (ACOE) jurisdiction and are subject to environmental regulations applied to wetland preservation.
Approximately .17 hectares (.42 acres) of waters and wetland resources would be filled or damaged directly by extending existing culverts. The culvert additions would include portions of a linear drainage strip paralleling the roadway. Approximately .032 hectares (.08 acres) waters at Laguna De Santa Rosa and Colgan Creek will temporarily be impacted during construction.

Although there are no significant impacts to wetlands or creeks, ACOE Nationwide 404 permits and a California Department of Fish and Game 1601 Streambed Alteration Agreement will be required. All permits required will be obtained prior to construction.

3.7.1 Wetlands Only Practicable Alternative Finding

Pursuant to Executive Order 11990 for the Protection of Wetlands which establishes a national policy to avoid adverse impacts on wetlands wherever there is a practicable alternative, it has been determined that:

(a) There are no practicable alternatives to the wetlands impacts identified in this document. The purpose and need for this project is to reduce congestion and improve efficiency along this section of highway. In order to accomplish this, additional lanes must be added to Route 101, which is adjacent and perpendicular to various known, degraded wetlands in the form of man-made culverts and drainage ditches. The only alternative that will not impact the wetlands is the No Build Alternative, but the No Build will not satisfy the purpose and need for the project. Accordingly, implementation of this project cannot occur without some construction and excavation occurring within wetland areas.

(b) the actions proposed include all practicable measures to minimize harm to wetlands. These measures are specifically identified in **Section 5.IV.c.i.**

(c) Based upon the above considerations, it is determined that there is no practicable alternative to the proposed construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use.

3.8 Vegetation

The proposed project has impacts on mature trees, including California native oaks (*Quercus lobata and Quercus agrifolia*), landscape redwoods, and other trees and shrubs (i.e. - Pine, Eucalyptus, Willow, Cottonwood, White Birch, Box Alder) scattered within the Caltrans Right of Way. The large redwood trees represent decades of growth.

3.9 Fish and Wildlife

Mature oaks in particular and other prominent trees may provide habitat for birds and small animal species. Naturally occurring redwoods provide food and shelter for 193 wildlife species. Consultation done in coordination with appropriate resource agencies (California Department of Fish and Game, National Marine Fisheries Services, U.S. Fish and Wildlife Service), Caltrans field studies and available sources (California Natural Diversity Database) indicate that due to the close proximity of the roadway to the project area, there are no sensitive species or critical habitat in the disturbed/developed area adjacent to this portion of Route 101. It is unlikely that the project will have any adverse impacts on sensitive or endangered species or their habitat.

The California Department of Fish and Game (CDFG) and the National Marine Fisheries Services (NMFS) have indicated that there is a known steelhead run (*Oncorhynchus mykiss*) in Laguna De Santa Rosa Creek. Steelhead is a federally threatened species.

The CDFG indicates that the northwestern pond turtle (*Clemmys marmorata marmorata*) may be in Laguna De Santa Rosa Creek. This turtle is a federal species of concern. It inhabits permanent streams and ditches in the North Coast Ranges north of the San Francisco Bay.

All work to be done within Laguna De Santa Rosa Creek would occur during the construction window as required by the Fish and Game permit. To insure project impacts avoidance, resource agencies require a Caltrans fisheries biologist to inspect the site prior to dewatering activities and construction
Based on the available sources (California National Diversity Database) and field surveys, no suitable habitat occurs for other sensitive species listed within the Santa Rosa Quad.

3.10 Land Use and Planning

Sonoma County is one of the fastest growing regions within the greater San Francisco Bay Area. The project area, is the only through route that connects the major population and commercial centers and is the primary commute corridor between communities and the San Francisco Bay Area. Due to restrictive geography, limited financial resources, and special provisions placed on major transportation infrastructure development by city and county general plans, another principal arterial through Sonoma County is not a realistically feasible option.

The 1995 Congestion Management Program for Rohnert Park and Santa Rosa posits two primary causes for existing traffic bottlenecks and delays along the Highway 101 corridor:

- Insufficient capacity along critical segments of Highway 101, where gaps between segments that provide high occupancy vehicle (HOV) lanes narrow or end; and
- growth in travel demands resulting from new North Bay jobs and households.

The HOV **2+** Alternative is consistent with local, state and federal transportation plans.

3.11 Scenic and Visual Resources

The overall visual quality of the landscape along the Route 101 corridor in the proposed project area is moderately high. The route is not part of the State Scenic Highway System, however it is identified as a scenic corridor in the Sonoma County General Plan. Views from the highway are available directly east to the Sonoma Mountains and north to the various mountain ranges separating Sonoma and Napa Counties. The mountain ranges are studded with oak woodlands and rise approximately 750 meters (approx. 2,500 feet) high. Redwood trees dot the corridor and interchanges. Most of these trees were planted by Caltrans as landscape trees along the highway in the 1950's and their mature forms visually characterize the highway's name: "The Redwood Highway."

The State-owned right-of-way along the straightaway sections within the project area is extremely narrow in places as shown in **Exhibit 3-11.a.** A shallow drainage ditch runs most of the way along each side of the roadway to collect and remove storm water from the paved surface. A number of large outdoor advertising signs (billboards) occur on private property at various places adjacent to the highway, such as is seen in **Exhibit 3-11.b.**

Field counts[2] of trees within the 8 kilometer project area show that there are a total of about 1200 trees of various species within the highway right-of-way, including the larger areas at the five interchanges. Approximately 850 or 70 percent of the total trees are redwoods. Most of the redwoods are growing as multi-trunk forms with three to five trunks growing from a single base and root system, chiefly arranged in groups of five to ten. These groups are distributed along both sides of the highway, usually at intervals of approximately 90 to 120 meters but varying up to 275 meters. Between and adjacent to the groups of redwoods, trees and shrubs of other species exist including oak, pine, eucalyptus, acacia and non-ornamental volunteers. Redwood trees in the larger groups are arranged in two straight, closely spaced rows of four or five each. The back row is usually from 1 to 1.5 meters from the chain-link fence that runs along the property line at the highway right-of-way. Trees in smaller groups are arranged in a single row, usually 1 to 1.5 meters from the property line.

[2] **Counting Methodologies**
Specific counting methodologies were used for redwoods. Many of the redwoods within the project area grow as multi-trunk forms with multiple stems or clusters growing from a single base and root system. The redwood tree survey conducted by Caltrans Landscape Architecture identified each multi-trunk form as one tree.

3.12 Public Services and Facilities

The proposed project would require a temporary construction easement of a linear park (South Davis Park - located adjacent to southbound SON 101 in the northern end of the project area. -See **Exhibit 3-12**) to build the soundwall. A Section 4(f) temporary use agreement has been drawn up and signed by the Santa Rosa Parks and Recreation Department. Section 4(f) of the Department of Transportation Act (1966; 1968 as amended) mandates the avoidance of the use of public parks (among other specified locations) for transportation facilities. Because of the temporary nature of the easement required, the temporary construction easement for this project is deemed to not constitute a use under Section 4(f) with the agreement of the agency of jurisdiction. See **Section 9** for the signed Temporary Use Agreement.

3.13 Historic and Cultural Resources

This proposed project has a minimal Area of Potential Effect (APE) and would consist of corridors paralleling both sides of the roadway. Each corridor extends approximately 5 meters from the edge of pavement to the freeway and is within the state's right-of-way. The proposed project would not affect any properties on or eligible for the National Register of Historic Places and a literature search and field surveys did not result in identifying any historic or archaeological resources within the APE.

3.14 Socioeconomic Conditions and Growth

ABAG, the Association of Bay Area Governments, states that the North Bay counties of Sonoma, Solano, and Napa, as well as the East Bay county of Contra Costa, are predicted to face the highest percentage growth in population, households, and jobs between 1995 and 2020. Additionally, Sonoma County along with Solano and Napa Counties will have the greatest percentage increase in employment between 1995 and 2020. The Sonoma County employment rate also is projected to increase 68 percent. During the same period, Santa Rosa will have the largest absolute population growth (additional 54,100 residents) and will lead the region in job growth, adding 51,530 jobs during the 1995 to 2020 period.

The growth in the region can largely be attributed to growth pressures that would occur whether or not the project is constructed. Planned development is not expected to exceed that which is projected in the local general plans. Local plans and policies (including the Calthorpe Plan, the Sonoma County General Plan, the ABAG/Sonoma County Subregional Planning Initiative, and the Santa Rosa Growth Management Plan) support planned growth.

Sonoma County has growth management policies in place in order to avoid the potential for unplanned growth and the adverse effects associated with it. The widening of the highway in the project area is in conformance with the Growth Management Element in the Santa Rosa General Plan. The Growth Management Ordinance, adopted in 1992 allows for the expansion of necessary public facilities to protect the City's social and economic values in existing and future residential, commercial and industrial areas. These values are balanced with the City's attendant commitment to conservation of vital open spaces and natural resources. Future urban developments, featuring this project's improvement to Highway 101, are accommodated by an Urban Growth Boundary until the year 2020. The implementation of urban growth boundaries is a primary long-term strategy employed by most Sonoma County cities with respect to managing the patterns of growth and development.